

## CURRICULUM VITAE

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<https://scholar.google.com/citations?user=6G0vCXQAAAAJ&hl=en>

### 1. Personal Data

Date of Birth: 17/04/1983

Nationality: Jordanian

### 2. Education

#### ○ **Ph.D. in Nuclear Physics:**

**An Interdisciplinary Ph.D. Program in Computational Science & Engineering**

Specialty: Nuclear Physics (Computational and Experimental)

January 2014 - October 2018, North Carolina Agricultural & Technical State University, North Carolina State, USA.

#### ○ **M.Sc. in Applied Physics:**

Project Topic: Synchrotron Radiation, advantage and disadvantage

September 2005 - May 2008, Jordan University of Science & Technology, Irbid, Jordan.

#### ○ **B.Sc. in Applied Physics:**

September 2001 - May 2005 Jordan University of Science & Technology, Irbid, Jordan.



### 3. Ph.D. Dissertation

Thesis Title: “Precision Measurement of the Elastic Electron-Proton Cross Section at High  $Q^2$ ”, North Carolina Agricultural & Technical State University, North Carolina State, USA.

### 4. Employment

#### Academic Positions

- o Assistant Professor, Physics Department, Al-Zaytoonah University of Jordan, Amman, Jordan, September 2021 – now.
- o Assistant Professor/Part time, Physics Department, Jordan University of Science & Technology, Irbid, Jordan, September 2019 – August 2021.
- o Assistant Professor/Part time, Department of Basic Sciences, Princess Sumaya University for Technology, Amman, Jordan, September 2019 – June 2020.
- o Visiting Assistant Professor, Department of Physics, North Carolina Agricultural & Technical State University, North Carolina State, USA, January 2019 - June 2019.
- o Research Assistant, Nuclear Non-Proliferation Group/ Department of Physics, North Carolina Agricultural & Technical State University, North Carolina State, USA, October 2018 - January 2019.
- o Research & Teaching Assistant, Department of Physics, North Carolina Agricultural & Technical State University, North Carolina State, USA, January 2014 - October 2018.
- o Research Assistant, Thomas Jefferson National Accelerator Facility, (JLab), Virginia State, USA, April 2016 - October 2018.
- o Part time lecturer, Department of Basic Sciences, Al-Huson University College, Irbid, Jordan, September 2010 - May 2011.
- o Part time lecturer Department of Physics, Yarmouk University, Irbid, Jordan, September 2008 - August 2009.
- o Physics and Mathematics Teacher, Ministry of Education, Irbid, Jordan, September 2005 - August 2010.



### Administrative Positions

#### 5. Research Interests

○ **Experimental nuclear and particle physics to study the internal structure of the nucleon includes:**

- Particle physics detectors.
- Monte Carlo simulations for elastic electron-proton scattering.
- Investigations of detector response to different kinds of radiation, data acquisition, data processing in order to optimize the experimental results.
- Electric and magnetic form factors calculations.

○ **Condensed Matter & Materials Physics:**

- Properties of materials (Optical, Thermal, Magnetic).
- Photocatalytic.
- Solar energy.

**Computer and Computational Skills:**

- **Programming Languages:** C++, FORTRAN and Python.
- **Software and Platforms:** root toolkit, MatLab, and Mathematica.
- **Operating Systems:** Windows XP, Windows 7, and Linux.
- **Simulations:** Monte Carlo Simulations *SIMC* and *SAMC*, and good knowledge *GEANT4* during my research at JLab.
- **Data Analysis:** Data Analysis using root toolkit, C++ and Mathematica.

#### 6. Membership in Scientific Societies and Associations

Member; American Physics Society.

Member; The Jordanian Physical Society.

#### 7. Honors and Awards

- Tuition Remission GRD Award for Outstanding Performance as a Graduate Student for the Academic Year 2015 - 2016, North Carolina Agricultural and Technical State University.
- Tuition Remission GRD Award for Outstanding Performance as a Graduate Student for the Academic Year 2014 - 2015, North Carolina Agricultural and Technical State University.

#### 8. Fellowships and Scholarships

- ERC Project (Engineering Research Center) for the Academic Year 2014 - 2018, North Carolina Agricultural and Technical State University, College of Engineering, Department of Computational Science & Engineering.



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- Intermediate Energy Spin for the Academic Year 2014 - 2018, North Carolina Agricultural and Technical State University, College of Arts and Sciences, Department of Physics.

## 9. Teaching Experience

- **Graduate Courses**

List names of course

- **Undergraduate Courses**

- **Al-Zaytoonah University of Jordan:**

- General Physics – PHY-135 (physics for pharmacy major)

- **Jordan University of Science & Technology:**

- Introduction to Mathematical physics – PHY-200
- Thermodynamics – PHY-261
- Quantum Mechanics – PHY-351
- Nuclear Physics – PHY-449
- Physics for Biology and Pre-Medical Students – PHY-101A
- General Physics – PHY-101 (Mechanics)
- Medical Physics – PHY-104

- **Princess Sumaya University for Technology:**

- General Physics – PHY-102 (Electricity and Magnetism for IT major)
- General Physics – PHY-102 (Electricity and Magnetism for engineering major)
- General Physics – PHY-101 (Mechanics)

- **North Carolina Agricultural & Technical State University:**

- Introduction to Computation in Physics – PHY-345
- General Physics (Calculus-based physics) – PHY-241
- College Physics – PHY-225 (Mechanics)
- Physics Labs – PHY-235 & PHY-236 (Mechanics, Electricity and Magnetism)
- College Physics I (Mechanics) & II (Electricity and Magnetism)
- Physics – Lab 105 (Mechanics) & 106 (Electricity and Magnetism)

## 10. Supervision of Graduate Research

Provide numbered list with the name of student, title of thesis, year



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11. Grants
12. Patents
13. Membership of Committees

#### 14. Professional and Scientific Meetings

##### *Participation in Scientific meetings*

- APS April Meeting, **2021**, Washington D.C, USA, 'Enhancing Introductory Physics Courses Using The SCALE-UP Active Learning Model'.
- APS April Meeting, **2018**, Columbus, Ohio, USA, 'High Resolution Spectrometer (HRS) Detector Efficiency in GMP Experiment (E12-07-108) at **JLab**'.
- APS April Meeting, **2018**, Columbus, Ohio, USA, 'Precision Measurement of the Proton Elastic Cross-Section at High  $Q_2$  at **JLab**'.
- APS April Meeting, **2016**, Salt Lake City, Utah, USA, 'Gas Ring Cherenkov Detector for High Luminosity and High Background Rates Experiments at Hall-A Jefferson Lab'.
- APS April Meeting, **2016**, Salt Lake City, Utah, USA, 'Quartz Hodoscop for SuperHMS Spectrometer Trigger System at Hall-C Jefferson Lab'.

##### *Workshops and Training:*

- Fourier Transform Infrared Spectroscopy Training (FTIR), *The Regional Centre for Space Science and Technology Education for Western Asia/ United Nations*, **2020**, Amman, Jordan.
- Hall-A & C Summer Collaboration Meeting Workshop, *Thomas Jefferson National Accelerator Facility*, **2017**, Newport News, Virginia, USA.
- Data Analysis using root toolkit and C++ Workshop, *North Carolina Agricultural and Technical State University*, **2016**, Greensboro, NC, USA.
- GEANT4 Workshop, *North Carolina Agricultural and Technical State University*, **2016**, Greensboro, NC, USA.
- Radiation Worker I, *Thomas Jefferson National Accelerator Facility (JLab)*, **2016**, Newport News, Virginia, USA.
- Radiation Worker II, *Thomas Jefferson National Accelerator Facility (JLab)*, **2015**, Newport News, Virginia, USA.
- 30<sup>st</sup> Annual Hampton University Graduate Summer Program Workshop, *Thomas Jefferson National Accelerator Facility (JLab)*, **2015**, Newport News, Virginia, USA.

**15. Participation in or organization of curricular and/or extra-curricular activities****16. Publications**

- D. Bhetuwal, J. Matter, H. Szumila-Vance, M. L. Kabir, D. Dutta, R. Ent, D. Abrams, Z. Ahmed, **B. Aljawrneh**, *et al.* "Ruling out color transparency in quasi-elastic  $^{12}\text{C}(e,e'p)$  up to  $Q_2$  of 14.2 (GeV/c) $^2$ ". *Phys. Rev. Lett.* **126**, 082301 –23 February 2021.
- L. Gu, D. Abrams, A. M. Ankowski, L. Jiang, **B. Aljawrneh**, *et al.* "Measurement of the  $Ar(e, e p)$  and  $Ti(e, e p)$  cross sections in Jefferson Lab Hall A". *Phys. Rev. C* **103**, 034604 – 3 March 2021.
- Carlos Yero, D Abrams, Z Ahmed, A Ahmidouch, **B. Aljawrneh**, *et al.* "Probing the Deuteron at Very Large Internal Momenta". *Physical Review Letters.* **125**, 29 December 2020.
- M. Murphy, H. Dai, L. Gu, D. Abrams, A. M. Ankowski, **B. Aljawrneh**, *et al.* "Measurement of the cross sections for inclusive electron scattering in the E12-14-012 experiment at Jefferson Lab". *Physical Review C* **100** (2019) no.5, 054606.
- W. Xiong , A. Gasparian , H. Gao , D. Dutta, M. Khandaker , N. Liyanage , E. Pasyuk , C. Peng1 , X. Bai, L. Ye , K. Gnanvo , C. Gu1 , M. Levillain , X. Yan, D. W. Higinbotham , M. Meziane , Z. Ye, K. Adhikari, **B. Aljawrneh**, *et al.* "A small proton charge radius from electron-proton scattering experiment". *Nature* **2019**, 75(7781):147-150.
- H. Dai, M. Murphy, V. Pandey, D. Abrams, D. Nguyen, **B. Aljawrneh**, *et al.* "First Measurement of the Ar (e,e) X Cross Section at Jefferson Lab". *Physical Review C* **2019**, 99, 054608.
- H. Dai, *et al.* M. Murphy, V. Pandey, D. Abrams, D. Nguyen, **B. Aljawrneh**, *et al.* "First Measurement of the Ti (e,e) X Cross Section at Jefferson Lab". *Physical Review C* **2018**, 98, 014617.
- **B. Aljawrneh**, *et al.* "High Resolution Spectrometer (HRS) Detector Efficiency in GMP Experiment (E12-07-108) at **JLab**", *APS April Meeting, 2018*, Columbus, Ohio, USA. [BAPS.2018.APR.T01.5](#).
- T. Gautam, *et al.* "Precision Measurement of the Proton Elastic Cross-Section at High  $Q_2$  at **JLab**", *APS April Meeting 2018*, Columbus, Ohio, USA. [APS..APRB12005G](#).
- **B. Aljawrneh**, *et al.* "Gas Ring Cherenkov Detector for High Luminosity and High Background Rates Experiments at Hall-A Jefferson Lab", *APS April Meeting, 2016*, Salt Lake City, Utah, USA. [BAPS.2016.APR.K10.4](#).
- N. Alharbi, *et al.* "Quartz Hodoscop for SuperHMS Spectrometer Trigger System at Hall- C Jefferson Lab", *APS April Meeting, 2016*, Salt Lake City, Utah, USA. [BAPS.2016.APR.K10.3](#).



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**Submitted:**

- Measurement of the Nucleon  $F_2n/F_2p$  Structure Function Ratio by the Jefferson Lab.
- Form factors and two-photon exchange in high-energy elastic electron-proton scattering
- Deep exclusive electroproduction of  $\pi_0$  at high  $Q_2$  in the quark valence regime.

**Under preparation:**

- Photocatalytic Degradation of Methylene Blue/Red Using Membranes of Cerium Oxide nanoparticles, Titanium Oxide nanoparticles, and their nanocomposites.
- Two-Photon Exchange in Electron-Proton Elastic Scattering at Large Momentum Transfer.
- Novel Techniques for High-Resolution Spectrometer Detector Package Efficiencies.
- Precision Measurement of the Elastic Electron-Proton Cross Section at High  $Q_2$ .